

THE SMALLPOX EPIDEMIC AT NIAGARA FALLS.

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GENERAL DESCRIPTION.

THE city of Niagara Falls is situated on the easterly shore of the Niagara River midway between Buffalo and Lake Ontario. The city of Niagara Falls was incorporated in the year 1893, having previously been an unincorporated village in the town of Niagara Falls. In 1892 the town of Niagara Falls, including the unincorporated village, had a population of 12,638; in 1900 the city of Niagara Falls, excluding the surrounding township, had a population of 19,457, and in 1910—30,445.

Before its incorporation as a city, Niagara Falls was famous for its falls, and consisted chiefly of a few hotels and boarding houses and a number of other residents whose livelihood depended largely upon the tourist trade. Before being incorporated as a city it began to grow as a manufacturing village, and after the installation of the electric power plant, developed by means of the water power taken from the falls, its manufacturing growth rapidly increased as well as its population.

Its population is mainly native-born white, being 59.5 per cent.—25 per cent. of native parentage; 34.1 per cent. are of foreign or mixed parentage, and 39.6 per cent. foreign-born white. Of the foreign-born, nearly 4,119 are Canadians, 1,272 English, 832 Germans, 839 Irish, 1,926 Italians, 1,395 Russians, 860 Austrians, the remaining number of foreign-born amounting to about 750. By far a large majority of the inhabitants are of the better class citizens—mechanics, etc., and although a fairly large percentage are foreign-born yet these foreign-born are, in the main, intelligent.

Niagara Falls, like many other cities in New York State, especially in the western part of the state, is quite enthusiastic about home rule, and has to a certain extent considered interference from the central state authorities at Albany as being unnecessary and onerous. In this connection it is interesting to note the typhoid rates for Niagara Falls:

Deaths per 100,000.

1900-5.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
141.5	154.5	126.0	87.1	74.9	97.9	187.	71.5	29.4

An investigation of the sanitary conditions of the city of Niagara Falls was carried on by the Engineering Division of the State Department of Health during the summer of 1907, following which the Department urged

a new or filtered water supply. Apparently continuing to believe in the principle of home rule no attention was paid to these recommendations, and in 1910 another investigation followed and not only the city authorities but the people of Niagara Falls were warned of the danger of continuing to use the unfiltered river water for drinking purposes. It was not, however, until December, 1911, that filters were installed with the addition of hypochlorite treatment. The table shows a marked reduction in the death-rate per hundred thousand population since the installation of these filters.

HISTORY OF THE EPIDEMIC.

The first compulsory vaccination and re-vaccination law went into effect in Japan in 1885. Notwithstanding the enactment of this law they record in Japan during the following three years 125,000 cases of smallpox, with a mortality of 25 per cent. In 1860 the legislature of the state of New York enacted a law which reads that "no child or person not vaccinated shall be admitted or received into any of the public schools of the state, and the trustees or other officers having in charge the management or control of the schools shall cause this law to be enforced." Notwithstanding this law there have occurred in New York State during the past seven* years an average of 613 cases of smallpox a year, the large majority of these cases occurring in adults. Both of these facts have led the opponents of vaccination to conclude that vaccination did not protect against smallpox.

A review of the facts connected with the Niagara Falls epidemic explains to a certain degree the reason for smallpox continuing to be present in New York State.

On April 18, 1912, the health officer of Niagara Falls asked for assistance in the differential diagnosis of smallpox from chickenpox. The following day a diagnostician from the State Department of Health diagnosed five cases of smallpox in one family, none of whom had ever been vaccinated. The original case in this family was discovered in March in a little child ill with what was believed to be chickenpox. The health officer could not trace the source of the first case. The family lived near the railroad yards, and the child was said to have played with Italians who passed by to and from their work. Two cases across the way developed from this original focus. Chickenpox was not a reportable disease, and chickenpox had been prevalent at the Falls.

On May 9 a diagnostician was again sent to Niagara Falls and found two girls aged 9 and 11 who attended the same school that the children in the previously mentioned family did. Neither of these children had ever been vaccinated.

It was well known to the State Department of Health that Niagara Falls was an anti-vaccination center and that serious danger existed of a

*See Table No. 18.

large number of cases occurring there. It was also known that this sentiment would cause serious difficulty in controlling an epidemic.

The following instructions were given to the health officer May 9:

To vaccinate all persons directly exposed, or else quarantine them for at least two weeks.

To notify the managers of shops and factories where persons had been exposed to require such persons to be vaccinated before they returned to work.

Although the health officer was well-intentioned, it took exactly 20 months to carry out these two suggestions. These instructions were given to the health officer, and no further requests for assistance were made until the following year, although cases were reported to the State Department of Health each month during the remainder of the year. No general vaccinations were performed, and no serious effort made to control the disease, and only a few of the cases were sent to the quarantine hospital.

The next news about smallpox at Niagara Falls was received from the State Commissioner of Health of Pennsylvania, who wrote on January 14, 1913, that two men with smallpox had come to Centre County, Pennsylvania, from Niagara Falls. On January 23 another case was reported from Lewisburg, Pa., that had been traveling in Western New York.

On January 25, 1913, the health officer of Niagara Falls was notified of these facts, but no action was taken owing to a new health officer being appointed about February 1, 1913.

On February 21, 1913, the new health officer reported to the State Department that there were ten cases of smallpox in the city, and asked for assistance. A diagnostician was again sent and he found two positive cases in the quarantine hospital.

Early in the year an article appeared in a Memphis paper urging vaccination, and written by W. A. Evans of the *Chicago Tribune*, who referred to Niagara Falls as a "Plague spot" and stated that there were eight new cases of smallpox reported the week ending February 26. This statement was apparently challenged by the Christian Science Committee on Publications of the state of Tennessee, who telegraphed the mayor of Niagara Falls asking if the statements were true, and received no answer. This Committee then telegraphed the president of the Board of Education of Niagara Falls and received the following reply: "Statement that smallpox is epidemic in Niagara Falls absolutely without foundation. Not a single case of the disease in the city." This statement was written when the health officer knew of ten cases of smallpox in the city. ◊

The State Department of Health again made recommendations to the health officer, but no definite action was taken, and not until on November 26, 1913, was another request received for assistance, and again cases of both smallpox and chickenpox were found.

On December 14, 1913, another request was made for assistance, apparently as a result of a threat of quarantine made by Buffalo. For the first time since the cases developed at Niagara Falls the physicians were assembled and urged to coöperate and vaccinate exposed persons. The physicians met with the Board of Health, but no definite instructions were formulated by either state or local department at that time.

On the 19th of December and again on the 28th and 29th the State Department of Health sent a representative who found the situation much the same—new cases constantly occurring and but little activity among the city fathers except talk. The health officer, an informed and competent physician, was utterly unable to do more than have several schools closed, and the year 1913 closed with little having been accomplished.

On January 3, 1914, a letter was sent to the leading citizens urging the importance of vaccination, and the leading manufacturers were persuaded to urge their employees to be vaccinated. In one instance where a case of smallpox was found in a factory the manager offered free vaccination or two weeks lay-off without pay, and only seven out of 97 employees accepted vaccination.

On January 6 there were 51 active cases, most of whom were in their own homes. On this day the mayor, the health officer, the Health Board, and Industrial Commission held a conference with the representative of the State Health Department, and the department's representative urged that nurses be employed to inspect the schools and factories and that every suspicious case be quarantined, and that this quarantine be rigidly maintained, and that special physicians be designated for vaccination.

By the 9th of January some actual progressive work was being performed; house quarantine enforced by special officers; doctors investigating and giving free vaccinations (over 700 vaccinated this day); 17 nurses making daily visits to schools, factories and homes; a daily citizens' meeting with the Health Board to discuss the situation, and an earnest desire on the part of the manufacturers to have the epidemic controlled.

Notwithstanding all these efforts "the man on the street" said that there was no smallpox in Niagara Falls; that vaccination was killing lots of people; anti-vaccination literature was freely distributed, and the local papers were openly or tacitly sympathetic to the anti-vaccinationists.

On January 12 there were 75 known cases, with but few of these in the quarantine hospital, which with accommodations for 30 patients had never been filled. Vaccination was proceeding—about 500 a day.

Smallpox began to be reported from varying cities, towns and villages nearby.

By January 19 the quarantine hospital was filled, and 66 houses were under quarantine. In most of the houses where cases had occurred, second-

dary cases followed, vaccination having been refused, and 110 special police were employed.

On January 20 there was a change of administration at Albany, which had for some days been pending, and Dr. Hermann M. Biggs was appointed Commissioner of Health, and the day following a special representative of the State Department was authorized to go to Niagara Falls and take entire charge of the situation. On January 27 more urgent measures were adopted. The local Department of Education refused to do anything in regard to the compulsory vaccination law.

The attention of the local authorities was called to the fact that the health officer had, by city ordinance, power to remove any case of smallpox from his home to the quarantine hospital. The city attorney, however, openly advised against this procedure as being illegal and unconstitutional until the attorney general of the state handed down an opinion that this city ordinance was legal and constitutional.

On January 28, 1914, a bulletin was issued to the health officers of New York State, calling their attention to the amount of smallpox in New York State.

On the same day the following telegram was sent to Dr. Edward Clark, the State Department's representative at Niagara Falls:

"More radical measures must be taken in Niagara Falls to suppress the epidemic of smallpox. The people of other portions of the state must be protected against the follies of any local community at whatever cost may be necessary.

"I should much prefer that the Department should act in coöperation with the local authorities rather than issue direct orders for enforcement.

"In my judgment the following measures should be immediately adopted by the local authorities:

"1. Close all places of public assemblage; churches, theaters, dance halls, moving picture shows, similar places of entertainment, public libraries, etcetera.

"2. Close the public schools, or exclude from attendance all unvaccinated school children.

"3. Close the factories and workshops of all kinds, or exclude all unvaccinated employees.

"4. Close the hotels, or require the vaccination of employees.

"5. Enforce rigid quarantine against all houses containing smallpox cases and all exposed and unvaccinated persons.

"6. Remove to isolation hospital all cases of smallpox so far as accommodations permit.

"7. Enforce strictly all the provisions of the Sanitary Code of the City of Niagara Falls.

"Kindly request the mayor to call a meeting of the local authorities, prominent business men, and manufacturers and present this telegram to them.

"It would be most unfortunate, in my judgment, from all points of view, if it should become necessary to absolutely isolate Niagara Falls from its relations with other portions of the country.

"Kindly advise me what decision is reached and what action is taken. Do you desire further assistance?

H. M. Biggs."

On January 29 the mayor, health officer, and business men held a meeting and unanimously adopted a series of resolutions embodying all the recommendations of the State Department. These resolutions were also adopted by the Niagara Falls Board of Health.

A large number of persons in Niagara Falls still believed that smallpox was not present; that it was all a bluff, and vaccination was being enforced because the doctors needed business. And others believed the commissioner's suggestion of January 28 that it might become necessary to isolate Niagara Falls from the rest of the world, was also a bluff.

The State Department of Health had received assurances from the railroads passing through Niagara Falls that notices would be placed in all stations in New York, and warnings in all passenger cars whenever desired, and that if necessary no passengers would be allowed to depart from or alight at Niagara Falls.

Notices were printed and in readiness for distribution January 31, 1914, as follows:

WARNING!

SMALLPOX!

HERMANN M. BIGGS, M. D.,
Commissioner.

NEW YORK
STATE DEPARTMENT OF HEALTH
ALBANY

MR. A. H. SMITH, *President, New York Central Railroad, Grand Central Terminal,
New York City.*

Dear Sir: There exists at the present time an epidemic of

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due to the local prejudice against vaccination. There is serious danger of the transmission of the disease along the lines of the railroad to all parts of this state and to other states. There is also danger of infection of the railroad employees. Before taking any more drastic action in relation to the existing situation, we wish to ask the assistance and cooperation of the officers of the transportation lines running into Niagara Falls in respect to the following measures:

1. That the officers of your company use every means to induce your employees, especially on the divisions west of Syracuse, to protect themselves from infection by immediate vaccination.
2. That in case of illness of any employee living in Niagara Falls, notification be immediately sent to the health officer of the city.
3. That your employees be warned to mingle as little as possible with the citizens of Niagara Falls.
4. That all persons who have no business to transact and who are not entering or leaving trains at Niagara Falls be excluded from the station.
5. That a notice be hung at the end of every passenger car on every train stopping at Niagara Falls, warning passengers of the existence of smallpox and cautioning them against stopping in Niagara Falls, unless they have been protected by a recent and successful vaccination.

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There are at the present time about 133 cases of smallpox at Niagara Falls. We hope by the adoption of active measures to prevent further extension of the disease, and we ask for your assistance and cooperation to this end. Notices for posting in railroad stations are being forwarded.

Very sincerely yours,

HERMANN M. BIGGS, *Commissioner of Health, New York State.*

WARNING

SMALLPOX

EXISTS IN EPIDEMIC FORM IN NIAGARA FALLS.

Passengers are warned not to stop there unless they have been protected by recent and successful vaccination.

BY ORDER OF THE NEW YORK STATE DEPARTMENT OF HEALTH.

Fully realizing the incalculable monetary damage that such a procedure would cause their city, redoubled efforts were made by the business men to secure the vaccination of their employees and all other persons.

The commissioner, having received assurances from the mayor, board of health, and business men, that his recommendations would be carried out to the letter, the order was rescinded.

The activity of the Niagara Falls authorities was made the more zealous because the Dominion had quarantined Niagara Falls and had guards at the Canadian end of the bridge over Niagara River, and allowed no one to enter on foot, vehicle or trolley without a vaccination certificate.

On February 5, 1914, the following official bulletin was issued to all the health officers of the state, giving detailed directions for the control of smallpox, as follows:

"Smallpox now exists in epidemic form in Niagara Falls, and new cases in nearby places are almost daily coming to the attention of the department. Twelve cases in nearby outlying towns which had not been reported were discovered by a representative of the department last Thursday, and on Friday in two other towns, eight were found which had been diagnosed as chickenpox. Some of these were of a severe type and recovery is uncertain.

"This condition of affairs must not continue. Every case of smallpox or chickenpox, as well as every other case of any reportable disease, *must be promptly reported* to the local health officer, as required by law.

"You are hereby directed to at once take active measures to secure the prompt report of every case of infectious disease occurring in the territory under your jurisdiction, and to report the same to the State Department of Health as required by law. It is the duty of every physician, nurse, teacher, clergyman, householder, employer, police officer, hotel or lodging house keeper, head of a family or other person who has knowledge of any such case to report it to the health officer.

"Upon being informed of the existence of a case of any contagious disease you are further directed to at once adopt such measures as are necessary to prevent its spread.

"In dealing with *smallpox* you are directed to take the following action:

"1. Every case diagnosed as smallpox shall be immediately isolated and kept isolated until the patient has fully recovered and all danger of the transmission of the disease has passed. If an isolation hospital is available within your jurisdiction every such case must be immediately removed there. Health officers have full power to cause such removal by force.

"2. Every suspected case of smallpox should be isolated until a definite diagnosis has been made, and all exposed persons should be at once vaccinated.

"3. Every person known to have been exposed to smallpox (contacts) should be immediately vaccinated. If the vaccination is within 48 hours of the time of the *first* exposure the person may be required to report for observation daily to the health officer, or to someone designated by him, until the vaccination takes or until a period of sixteen days from the *last* exposure has elapsed. If the first vaccination is not successful, all such persons should be revaccinated. These persons need not be quarantined if they are seen daily, and immediately isolated on the appearance of any symptoms.

4. "All persons exposed to smallpox who have *not* been recently successfully vaccinated and whose first exposure antedates forty-eight hours and who are immediately vaccinated, should be isolated and quarantined until the vaccination has definitely taken (for at least one week), or if the vaccination fails, until the full period of incubation of smallpox (sixteen days from the last exposure) has elapsed.

"5. All persons exposed to smallpox, who have been vaccinated recently with a successful result, may be immediately discharged from observation.

"6. All persons known to have been exposed to smallpox and who refuse vaccination, should be strictly quarantined for sixteen days from the date of the last exposure.

"7. A record should be kept of the names and addresses of all exposed persons, the action taken with reference to each, the date of vaccination, the dates of observation, with notes of the results of vaccination, (whether successful or not), and when revaccination is done, the date of this.

"8. When a person suffering from smallpox is quarantined in a house or an apartment a record should be made of the name and age of every person living in the house and these quarantined, and their presence in the house should be verified daily.

"9. If any person under quarantine escapes from observation, every effort should be made to determine where such person has gone and immediate notifications made to the Department of Health at Albany.

"10. During the prevalence of smallpox in the state the diagnosis of every case of chickenpox reported to you should be confirmed by a representative of the local health department, and such cases should be immediately reported to the Department of Health at Albany. In any case where the diagnosis is doubtful the patient should be isolated immediately, all exposed persons should be vaccinated, and the State Department of Health notified.

"11. You are requested to make a weekly report to the Department of Health of the number of vaccinations performed by you and also the number performed by others in your district so far as known to you.

"12. If the law excluding unvaccinated persons, whether school children or teachers, from the schools under your jurisdiction has not been enforced, you are requested to notify the State Department of Health and to direct the attention of the school authorities of the district to this fact.

"A campaign of education concerning the benefits of successful vaccination should be inaugurated in your district and carried on with vigor. This can only be accomplished by a strict compliance with these directions and by the practice of general vaccination, especially of all persons living in those sections of the state where smallpox is prevailing.

H. M. Biggs."

On February 7 one factory in Niagara Falls still refused to obey the recommendation that it be closed or its employees be vaccinated, and again it was necessary to threaten isolation of the city.

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On February 9 the following notice was posted at the above mentioned factory:

"IMPORTANT!"

"Tomorrow—Wednesday morning, be sure and bring certificates of vaccination or evidence of vaccination which it will be necessary for you to have before you can start work.

"Automatic Dept., Storehouse, Engine Room employees will present certificates at Automatic door, all other employees at general entrance on Highland Avenue.

"There can be no exceptions made."

By February 12 it was estimated that 18,923 vaccinations had been performed, and it was expected that there would soon be a diminution of the number of cases.

January 30. 76 houses quarantined.

February 6. 61 houses quarantined.

February 13. 35 houses quarantined.

For the first time an appreciable improvement.

On February 17 a delegation consisting of the mayor of Niagara Falls and seven business men came to Albany asking for the removal of restrictions and that less publicity be given to smallpox in Niagara Falls, to which request the commissioner made the following answer:

"The policy the department will pursue is one of complete publicity. That is the only way in which we can hope to obtain and retain the confidence of the public. If we say that there is no danger in any given situation we want the public to believe us. If we say that wholesale vaccination is necessary we want to have our advice followed. Any other policy than that of absolute honesty and full and frank publicity in public health work is ruinous. If you have smallpox, admit it and let other people know it. Through concealment you delude yourselves and lay others open to danger from which they cannot protect themselves. That is why we have given to the press such communications as we have found necessary to send to Niagara Falls."

On February 25 there were 15 houses quarantined, containing 39 cases; 15 in hospital.

February 26, 13 houses quarantined. Total 48 cases.

February 27, 12 houses quarantined. Total 46 cases.

February 28, 12 houses quarantined. Total 43 cases.

March 3, 9 houses quarantined. Total 33 cases.

March 4, 7 houses quarantined. Total 25 cases.

March 5, 7 houses quarantined. Total 23 cases.

March 6 (total vaccinations to date—25,184.)

March 8, 6 houses quarantined. Total 17 cases.

March 9, 4 houses quarantined. Total 11 cases.

March 10 (churches and places of public assemblage allowed to open.)

March 10, 3 houses quarantined. Total 13 cases.

March 11, 3 houses quarantined. (1 new case reported.) Total 13 cases.

March 12, 2 houses quarantined. (Public vaccination station closed.) Total 12 cases.

March 13, 2 houses quarantined. Total 12 cases.

March 15, 1 house quarantined. Total 10 cases.

March 16, 1 house quarantined. Total 10 cases.

March 17, 1 house quarantined. Total 7 cases.

March 18, 0 houses quarantined. Total 6 cases.

March 26, 0 houses quarantined. Total 1 case.

March 27, no new case since the 11th.

The *Niagara Press* on this date stated that there had been a few cases of Cuban itch and chickenpox at Niagara Falls, but no smallpox.

On March 30 the last case was released from the quarantine hospital.

One case was reported early in April, and on April 28th one case was reported, the last to date.

TYPE OF CASES.

The general type of cases was mild and discrete. There were few patients who were really seriously ill and there was only one death. No definite attempt was made to determine the actual period of incubation, but in those cases which were definitely noted it was found that from 12 to 15 days was the usual period after known exposure.

CLINICAL SYMPTOMS.

The clinical symptoms were very similar to those commonly described. The prodromal symptoms of headache were usually frequent and almost always severe backache, and a feeling of malaise, lasting from 2 to 3 days, and occasionally nausea and vomiting and a slight temperature. With the onset of the eruption there was an abatement of the severe backache and a diminution of the fever, and many patients felt well enough to go out and were up and about and frequently were found at work during the eruptive stage.

The large majority of cases was discrete, although there were a number of confluent and semi-confluent cases. No cases of hemorrhagic type were observed. The one patient that died had a septic condition.

STATISTICAL.

Reported cases of smallpox in New York State by months from January 1908 to November 27, 1914:

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1908	265	71	108	49	48	59	8	4	5	92	55	20	784
1909	63	72	32	33	42	25	16	12	2	7	29	53	386
1910	51	50	69	61	55	41	10	10	1	1	2	2	353
1911	7	5	6	5	34	33	25	14	9	9	24	170	341
1912	178	88	54	33	41	24	35	22	44	48	192	135	894
1913	67	64	94	129	87	77	72	27	24	21	73	88	823
1914	322	251	59	37	38	11	3	1	3	2	7		734

4,315

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Reported cases of smallpox in Niagara Falls from 1908 to 1914, according to date of report:

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1908	1	0	1	6	0	2	0	0	0	0	0	0
1909	0	1	0	1	0	0	0	0	0	0	0	1
1910	4	0	0	0	4	1	0	0	0	0	0	1
1911	1	0	0	1	0	0	0	0	0	0	0	0
1912	0	0	0	9	10	5	13	16	3	1	2	9
1913	9	18	3	3	9	7	4	6	5	9	66	57
1914	204	121	10	2	1	0	0	0	0	0	1	

In the year 1908 there were 10 cases of smallpox in Niagara Falls; 3 in 1909; 10 in 1910, and 2 in 1911, an average of 6.25 per year, or approximately 20 per hundred thousand per year, the population of Niagara Falls at that time being 30,000. This would have meant in New York City 1,000 cases per year, or 2,000 cases per year throughout the state, during which time the number of cases of smallpox throughout the state averaged less than 400.

In 1912 there were 66 cases of smallpox reported from Niagara Falls, or 204 per hundred thousand, which in New York City would mean 10,400 cases, or throughout the state 19,500 cases during that year, whereas the total number of cases in 1912 in the state of New York was 894.

In 1913 there were 176 cases of smallpox reported from Niagara Falls, or 51.7 per hundred thousand, which would mean 26,800 cases for New York City, or 50,200 for the whole state, whereas there actually were for the entire state 823 cases of smallpox reported.

During the year 1914 there were reported from Niagara Falls 339 cases of smallpox, the last case being reported April 30, 1914, that is, 965 per hundred thousand, or 51,800 cases for New York City, or 95,500 cases for New York State, whereas there actually were reported in New York State 734 cases.

From the first of January 1912 until the 30th of April 1914 there were reported from Niagara Falls 550 cases of smallpox. Of this number 286 were between the ages of 15 and 45, or 52 per cent. Under 5 years there were 33 cases, or 6 per cent. The complete tabulation of the age groups is as follows:

	1912	1913	1914
Under 1 year.....	1	2	2
1 to 5 years.....	3	9	16
5 to 15 years.....	21	91	64
15 to 45 years.....	31	110	145
45 and over.....	11	13	17
Unknown.....	1	3	10
Total.....	68	228	254

OCCUPATIONS.

Of these 550 cases 33 were in children under 5 years; 190 were in school children; 52 in housewives; 22 in laborers; 71 in mechanics or operators in factories; 6 among city employees; 3 in mail carriers but employed in the post-office; 8 in railway employees; 2 in teachers; 26 miscellaneous occupations; 8 employees in business occupations, and 112 whose occupations were not given.

NATIONALITY.

It was a matter of extreme interest to note that in almost every instance the individual affected was a native-born American, and usually of the more intelligent class. Unfortunately the cards for reporting communicable diseases did not ask the question of nationality, so it is impossible to give definitely the number of cases among foreigners, but it was quite evident to all who had anything to do with the epidemic that it was chiefly among the better class American citizens.

VACCINATION.

Reference has already been made to the school law enacted in 1860, yet this law has practically been a dead letter and has never been enforced with any degree of vigor. A serious attempt was made to enforce it in the city of Olean in 1912, but the citizens of Olean made such a strong protest against it that the then Commissioner of Education did not enforce it.

The records of the cases of smallpox reported to the State Department of Health from 1908 to date show the following:

That of the 784 cases reported in 1908, 508 or 64.7 per cent. were never vaccinated. In 1909 of the 386 cases reported, 333 or 86.2 per cent. were never vaccinated. In 1910 of the 353 cases reported, 246 or 69.6 per cent. were never vaccinated.

* Total number of cases reported 1908-1914.....	4,315
Number never vaccinated.....	2,886
Per cent.....	73
Vaccinated 5 or more years previously.....	368
Per cent.....	9
No data.....	408
Per cent.....	10
Per cent. vaccinated within 5 years.....	8

* Omitting 341 reported in 1911.

Of the 550 cases of smallpox reported from Niagara Falls during the years 1912, 1913 and 1914, 483 cases or 87 per cent. had never been vaccinated; 26 or 4.6 per cent. had been vaccinated more than five years ago. Out of the 550 cases only 5 gave a history of having been vaccinated within five years, or .9 of one per cent.

Strong anti-vaccination sentiment exists in certain parts of New York

State, especially in the western part of the state in the counties of Niagara, Chautauqua and Cattaraugus, the cities of Niagara Falls and Olean having carried on for years a strong anti-vaccination campaign.

Marked assistance to the campaign has been rendered by the Anti-vaccination League of America, of which Mr. Chas. M. Higgins of Brooklyn is treasurer. Dr. John W. Hodge of Niagara Falls, a well-known physician in that locality, with a large practice, is also an ardent anti-vaccinationist, and during the last twenty years, as far as one can learn, practically no vaccination has been performed in Niagara Falls. This has been well known to the officials of the New York State Department of Health; and an epidemic of smallpox such as occurred in Niagara Falls had long been heralded.

The attitude of the citizens, and especially of the city officials, made the suppression of the epidemic an extremely difficult task, the president of the Board of Education and the city attorney being strong anti-vaccinationists, and the anti-vaccination sentiment being particularly strong among the better class of American citizens. Practically no headway was made against the epidemic until the business interests of the city realized that the epidemic was assuming serious proportions and cases were developing not only in the surrounding towns and communities, but that local epidemics were developing in adjacent counties, and that the Commissioner of Health would be compelled to quarantine Niagara Falls from the rest of the state, and as quarantine had already been established by the Province of Ontario against Niagara Falls that there would be serious economic loss if active measures were not taken to suppress the epidemic. Pressure was then brought to bear upon the city authorities, and the recommendations made by the State Commissioner of Health were energetically carried out.

Two weeks after this there was a marked diminution in the number of new cases developing, due chiefly to two facts—one, an opinion by the attorney general that the Sanitary Code of Niagara Falls providing that all cases of smallpox should be promptly removed to the quarantine hospital was entirely constitutional and legal; and second, that general vaccination was being performed.

One large manufacturing concern informed the representative of the State Department in January that 50 per cent. of its employees had been vaccinated and that it was not possible to have any more vaccinated. Three weeks later this same concern showed satisfactory evidence that all but three of their employees had been vaccinated, 300 or 400 having been vaccinated. Of these 3 one was at home sick; one had had smallpox, and the third was on the road as a traveling salesman.

EXTENSION OF SMALLPOX FROM NIAGARA FALLS.

During the years 1912 and 1913 there was apparently no definite extension from Niagara Falls, although a few cases of smallpox did occur in scattered localities having definitely become infected in Niagara Falls. With the beginning of the year 1914 new centers of infection were reported throughout the western part of the state. A few cases occurred in points in Pennsylvania and in New York City. Several new foci developed, which were readily traced to Niagara Falls, and others traced only with difficulty. In one instance a barber escaped from quarantine in Niagara Falls and continued to pursue his trade in a neighboring village, and nearly all of his customers in succession developed smallpox.

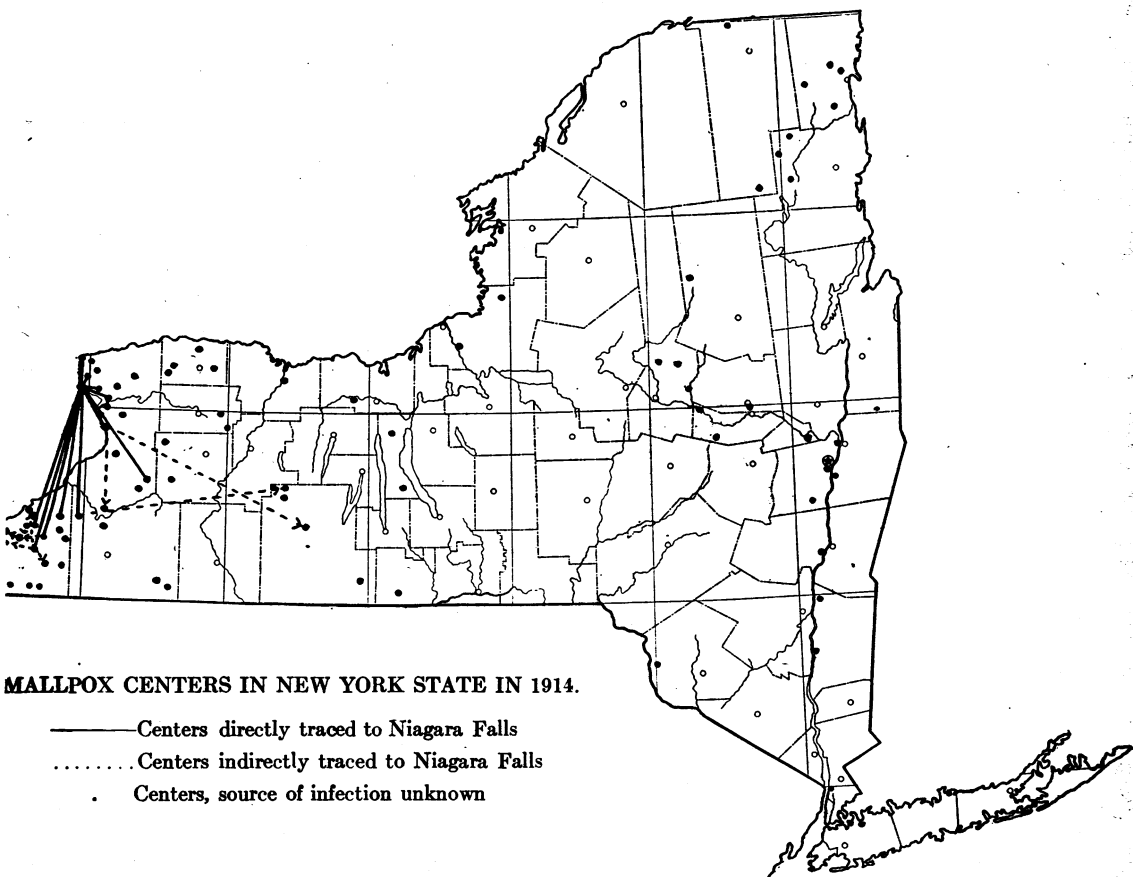
Another instance was the meeting of a religious sect known as the Holy Rollers, who met in a county and at this gathering were several residents of Niagara Falls. Two weeks after this meeting a large number of the persons who were at this meeting developed smallpox.

At a third gathering in Chautauqua County there were a large number of persons who were exposed at the same time. These persons came from many different parts of the state and were all exposed to one of their members who had active smallpox at the time of the meeting. This became known to a newly appointed representative of the State Department of Health, who was able to secure immediately after the meeting the names and addresses of all the persons at the meeting, and who then notified the health officer of the locality in which each individual lived, advising immediate vaccination, which was performed in the majority of the cases. At all events, no further cases developed as a result of this exposure.

No less than 21 foci occurred, which could be definitely traced to Niagara Falls. This is well shown upon a map of New York State.

SUMMARY.

1. Smallpox had been present from time to time in Niagara Falls since 1908. (Records not sent to State Department of Health previous to 1908.)
2. Niagara Falls was well known to be an unvaccinated city.
3. Chickenpox was not reported to the State Department of Health until May 1914.
4. Smallpox was endemic in Niagara Falls from April 1912 until May 1914.
5. Chickenpox was said to be present in Niagara Falls in 1912.
6. In the years 1913 and 1914 the existence of smallpox was denied by many intelligent persons in Niagara Falls.
7. The Sanitary Code required the removal of all cases of smallpox to the quarantine hospital. Owing to the attitude of the city authorities this city ordinance could not be enforced.



8. General vaccination did not begin until the second week of January 1914.

9. Cases of smallpox were not removed from their homes, nor was quarantine of houses rigidly enforced until January 1914.

10. Unvaccinated contacts in the same houses invariably contracted smallpox.

11. Vaccinated contacts did not develop smallpox.

12. Three weeks after compulsory removal and general vaccination began there was a steady diminution of the number of new cases reported.

13. General vaccination and immediate isolation, with the vaccination of contacts, is the only adequate method of controlling smallpox.

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